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THE NATURAL HISTORY OF SOUTHWESTERN CHIHUAHUA, MEXICO IN THE 1930'S

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ABSTRACT

A summary of conditions is given for southwestern Chihuahua during the 1930's. This summary is based on the experiences of the author as he lived, worked, and botanized in that area.

KEY WORDS: México, Chihuahua, ecology, historical summary

RESUMEN

Se presenta un sumario de condiciones del sudoeste de Chihuahua durante la década de los años 1930. Este sumario esta basado en las experiencias del autor durante el período en que vivió, trabajó, y estudió la flora de la región.

PALABRAS CLAVE: México, Chihuahua, ecología, sumario histórico

The Sierra Madre of western Chihuahua has been inhabited for many years by such Indian tribes as the Tarahumaras and the Tepehuanes. The ethnobiology of these tribes has been narrated by various writers such as Bennett & Zingg (1935), and Pennington (1963, 1969). Some prominent nineteenth century biologists who made serious studies there were Edward Palmer (in McVaugh 1956; Robinson & Fernald 1884-1895), Edward Nelson and Major Edward Goldman (Goldman 1951), and certain scientists with the several Carl Lumholtz expeditions (Lumholtz 1902). In this century are the works of Wilmer Tanner in herpetology (Tanner & Robinson, Jr. 1959), Sidney Anderson on mammals (Anderson 1972), and botanists Bailey & Wendt (1979), Bye, Burgess, & Trias (1975), Bye & Soltis (1979), Bye & Constance (1979), Clausen (1975), Correll (1962), Deghan & Webster (1978), Gentry (1942), Knobloch (1942-1983), Lindsay (1943), Mathiasen (1979), Spellenberg (1978), Wiens (1964), and Ayers (1987). The Chihuahuan Desert has been and continues to

be investigated intensively, but it is my opinion that the Sierra Madre Occidental which covers much of southwestern Chihuahua, still holds many surprises for the biologist.

I will essentially confine my remarks and observations to the areas around two towns, only dealing casually with other areas where I collected starting in 1937. The first locale is Mojarachic with a latitude of 27° 52′ N, longitude of 107° 55′ W, and an elevation of approximately 6900 feet (2103 m). The other town is Maguarichic at the same latitude, longitude of about 107° 59′ W, and at an undetermined elevation but approximately 1494 meters. These mining towns were not usually to be found on any map, but I was recently sent the Maguarichic section of a map on the scale of 1:50,000 by Dr. Tina Ayers which shows both places. Both towns are sometimes spelled without the final "c".

Mojarachic boasted only one or two permanent, and no more than 30 temporary families when the silver mine was in operation in the late 1930's. The mine was unprofitable and closed down shortly after I terminated my employment there in 1940 to pursue my doctorate at Iowa State in Ames. I am now able to report that the road to this site is impassable by truck due to washouts. Dr. Tina Ayers is the authority for this late information based on her personal experience. Maguarichic was a silver and gold mine easily reached by horse from Mojarachic (and by car from San Juanito) and there were several thousand persons there with most of the men being employed by the mine. This mine proved to be a huge success and it was believed that ore valued at about $15 million U.S. was extracted in just a short time. Modern maps now show a fine graded road going as far as Maguarichic.

Based on information which I have received from mining experts at the University of Texas--El Paso, the visible rocks are volcanic in origin. The buff-colored surface rock is rhyolite and underneath this type is a bluish andesite in which one usually located the gold and silver-bearing quartz veins. Several miles from Mojarachic I have seen cliffs of basalt. Sedimentary Cretaceous limestone is present in many parts of Chihuahua and is assumed to underlie the andesite mentioned above.

Small streams easily cut into the soft rhyolite and coalesce with others until they eventually drained into the large Río Fuerte which empties into the Gulf of California. The Sierra Madre contains a number of deep canyons (Urique, Cobre, Tararecua, Verde, Oteros, and Batopilas) and the terrain is very rugged indeed. Three of these canyons or barrancas will be mentioned below. Only occasional flat areas can be cultivated and in the 1930's the field workers used home-made wooden plows. As the furrow was made, another worker punched a hole in the furrow, dropped in a seed (fruit) and kicked the earth over the seed or fruit with his foot. Nature was then left to "take her course."

There were few cows to be seen and some ranchers favored goats. My wife and I possessed one female goat which furnished us with an ample supply of delicious milk. For meat we were able to select from several hundred chickens. Our other livestock consisted of a pair of horses, a pair of peacocks, and several turkeys. Our drinking water was carried from a hillside spring and dumped into an oil drum attached to the living quarters with a faucet in the kitchen. The water sometimes contained live salamanders.

Sons were highly prized in our area because they were put to work early and they turned their earnings over to their parents. Health care was almost non-existent. The Maguarichic mine had a small medical facility and their x-ray machine showed that an almost severed finger tip of mine would heal just fine. However, a few days later I noticed that gangrene had set in and a long, hurried trip by car, truck, and train to an El Paso, Texas hospital was imperative. Being before the use of penicillin, the doctor had to extract the poison by using flaxseed poultices and this he did one day short of cutting the arm off at the wrist. The dentist there (in Maguarichic) specialized in pulling teeth, a talent which my wife has always regretted. When the same young lady developed hepatitis, she had to go all the way to El Paso for treatment.

Law enforcement was in its infancy and there were posses going around regularly. Those who could afford to own a gun always carried it when away from their ranchito. Few natives wore eyeglasses or had store furniture because of the cost.

In the 1930's there was an east-west railroad in Chihuahua running from Ojinaga (opposite Presidio, Texas) to Creel. Its name was Kansas City, Missouri, and Orient and there is quite a story connected with its building. The wood-burning train boarded at Chihuahua City by us, was a combination passenger and freight outfit which stopped at every town and hamlet. Consequently, the trip to San Juanito, our destination, sometimes took as long as 22 hours. Children and adults sold food from napkin-covered baskets at almost every stop. Kerosene lanterns swayed from the ceilings of the passenger cars as the train slowly creaked along the worn-out road bed. Some cars had many bullet holes in them. How different it is today. In a remarkable engineering feat, the Mexican government has carried the railroad through very difficult terrain as far as Los Mochis on the Pacific side by means of many tunnels and bridges, thus providing the passengers with spectacular views of Chihuahua's barranca region. Modern lodges and hotels now enable the tourist an opportunity to stay a while and savor the beauty. The new railroad is named Ferrocarril de Chihuahua al Pacifico S.A. de C.V. México.

It is not possible to fully describe the physical features and ecological zones of Chihuahua in this short article; rather the reader can be referred to pages one to five of the book- "*Ferns and Fern Allies of Chihuahua, Mexico*," (Knobloch & Correll 1962) for a summary and the names of well-known students of the subject. It is possible that the above-mentioned book can be purchased at The Bookstore, University of Texas at Dallas, 2601 N. Floyd Rd., Post Office Box 688, Richardson, Texas 75080. Although I did some collecting in the central, more arid areas of Chihuahua, most was done on either side of the Continental Divide. The eastern or Atlantic side of the Divide features eroding mountains with many beautiful, flower-filled meadows in season. The Pacific drainage embraces most of the great barrancas of the state.

The Mojarachic area was in a transition zone of pines and oaks on the Pacific front but there were many other arborescent as well as shrubby taxa such as *Arbutus, Ilex, Ceanothus*, and *Arctostaphylos.* Although the rains did not start until May, some taxa were in flower in January and February such as *Salix* spp., *Arctostaphylos pungens* H.B.K. *Cupressus arizonica* E. Greene, *Juniperus,* and *Acacia* spp. In March we noted *Ceanothus buxifolius* Willd., *Dalea* cf. *formosa* Torr., *Viola* spp., and *Potentilla knoblochii* Standley, among others. April brought out the blossoms of various oaks, *Gaultheria glaucifolia* Hemsl., *Ilex* cf. *rubra* S. Wats., *Arbutus xalapensis* H.B.K., and *Opuntia* spp. May finds the bracken fern's croziers unrolling and some pines are

demonstrating new shoot growth. Many taxa are now coming into flower as we get into July, including *Hypoxis* sp., *Bouvardia glaberrima* Engelm., and *Ipomoea madrensis* S. Wats. The ericaceous *Pterospora andromeda* Nutt. was in flower in August, but my favorite flower, *Milla biflora* Cav. seems to be at its best in September.

As mentioned above, Maguarichic is lower, has less rainfall, is more arid and the vegetation might be called Short-Thorn. The lower slopes and bottoms of the great barrancas can likewise be called Short-Thorn or Tropical Deciduous Forest with large cacti, sizable *Bursera* and fig trees with *Crescentia alata* H.B.K. trees occasionally seen. Where the federal railroad nears the Sinaloa border and, also west of Guadalupe y Calvo the vegetation is semi-tropical or tropical depending on elevation and other factors. Sierra Mohinora, reached from the same town, may be in the Boreal Zone at its summit (about 3200 meters).

It is not possible to describe in this article all of the places I visited in Chihuahua, but it may be useful to some to know that I also examined the plant life in the vicinity of Guachochic (flying out of Cd. Chihuahua, including the Barranca Sinforosa and the area around the town of Guadalupe y Calvo (flying out of Hidalgo de Parral).

The ethnobiology of the region has been dealt with earlier by Bennett & Zing (1935), Pennington (1963, 1969) and lately by Bye, Burgess, & Trias (1975) and will not be discussed here. Modern medicine can still learn about possible uses of native Mexican plants.

In the late 1930's I left Mojarachic where I was employed, for San Juanito by truck, took the old train to Creel, and then proceeded to a mine in the Barranca del Cobre by truck and then by horse. There, as the guest of the late Mr. and Mrs. Zehtner, I spent two weeks exploring this famous canyon. Copper has been mined by various companies there since the late nineteenth century. The barranca is about 3,000 feet (914 m) deep from the top to the mine and it was here that I saw my first *Psilotum* and my first *Ficus*. I also saw my first river otter, an animal which the late Major Edward Goldman of the Smithsonian Institution did not believe occurred there. The natives in the canyon occasionally hunted for them for their valuable fur. The name of the river is the Río Urique, which runs westward until it reaches a hard rock formation at which point it runs south into the Barranca Urique, a deeper canyon than the Copper Barranca.

The depth of the Barranca Urique from the town of Cerocahui at the top, to the town of Urique at the bottom, was estimated to be about 5800 feet (1770 m) by Dr. Sidney Anderson (1972 and pers. comm.). Dr. Anderson's 1972 contribution was on the mammals of Chihuahua. Incidentally, on page 214, Anderson quotes Dr. Villa as saying that Mojarachic is the same place as Maguarachic but this is not correct according to the late map consulted. I have been down in the Barranca Urique twice; the first time was with Dr. Gerald Prescott (in 1954), a well-known algologist. We went in from a trail south of Creel before the new rails were laid. The second trip to the town of Urique was with Dr. Wilmer Tanner, a well-known herpetologist (in 1958).

It is well to add that the entire barranca region is inhabited by the cave-dwelling Tarahumara Indians. At the time of our trips there were said to be about 25,000

members of this tribe. Modern medicine is reaching these taciturn people and will improve their health but putting their men in blue jeans and so forth will probably destroy some aspects of their fascinating life style. Those family groups holding to their ancient customs will farm small areas at the top of the barrancas in the summer and practice their agriculture at the bottom in the cold winter months.

One more barranca should be mentioned, namely that enclosing the Río Batopilas. My main focus was the town of Batopilas where Edward Palmer (American botanist) worked in 1885 (Vasey & Scribner 1886-1887; Watson 1882-1883, 1886 a,b). The rare fern plants I was seeking were *Asplenium modestum* Maxon which I did not find, and *Cheilanthes weatherbiana* R.M. Tryon, which I did find. Lately, Dr. T. Reichstein of Basel, an expert in the genus *Asplenium*, has sent his co-worker Christopher Fraser-Jenkins twice to Batopilas to locate *A. modestum*. At this time, this rarity has not been rediscovered. My trip to this small town was in 1957 by truck from Creel to the Carmen Mine at La Bufa in the Batopilas Canyon, and thence by burro to the town. Now a fine road from Creel enters the town.

Of the 2832 sheets of plants collected by me in México, about 2300 of them were taken in Chihuahua. This is so because of my early residence there in the late 1930's and my later trips sponsored by the NSF to complete copy for the book by the late Dr. Donovan Correll and myself, mentioned earlier. The bulk of my specimens are at MSC, US, F, and MICH, but others are scattered among TEX, SBDG, SMU, WAHL, WIS, PENN, BM, RSA, MO, TAES, RM, MINN, MEXU, ENCB, DS, CHAPA, LL, CSLA, CAN, SD, CU, NY, NA, and UC.

Since my training included many courses in zoology, I could not resist noticing the fauna of a region I knew to be unexplored. Most of this sampling was done in the Mojarachic-Maguarichic region. Holo- and paratypes of a new salamander, *Ambystoma rosaceum* Taylor, were located at Mojarachic (Taylor 1941). This is the same creature we found in our drinking water.

Taylor (1940b) also described the holo- and paratypes of a snake, *Lampropeltis pyromelana* Taylor subsp. *knoblochii* Tanner (as *L. knoblochii*). This was from Mojarachic, as well as a new frog, *Hylactophryne tarahumaraensis* Taylor (as *Eleutherodactylus tarahumaraensis* (Taylor 1940a). Legler (1959) described a new snake, *Geophis aquilonaris* Legler but this has now been reduced to the subspecies level under *G. dugesii* Boucort.

A new species of fern was discovered in Nuevo León (a state in northeastern México) a fern long confused with *Cheilanthes tomentosa* Link. The holotype of this taxon, *C. chipinquensis* Knobloch & Lellinger is at US. *Briquetia inermis* Fryxell was found at La Bufa, s.e. of Creel, Chihuahua with the holotype at ENCB (Fryxell 1976). *Lobelia knoblochii* T. Ayers (Ayers 1987) was recently named with the holotype (F) coming from Mojarachic. *Tillandsia cretacea* L. Smith (at U.S.) came from La Bufa, s.e. of Creel and was described by Lyman Smith (1974). *Solanum citrullifolium* A. Br. var. *knoblochii* M. Whalen was located at the railroad town of San Juanito and named by Whalen in 1976. The last two new taxa came from Mojarachic. One was *Potentilla knoblochii* Standley with holotype at F (Standley 1940). The second was *Quercus knoblochii* C.H. Mull. (1942), probably a hybrid between *Q. coccolobaefolia* Trel. and *Q. viminea* Trel. The holotype is at F.

A list of all my collections is in a storage room in the herbarium at Michigan State University and a copy has been sent to Dr. Bye; the receipt of this list was acknowledged by him. A card file on the flowering plants collected in all of Chihuahua by other collectors was sent to Dr. James Henrickson and the receipt of this was acknowledged by him. Both of these items are potentially useful, but continuing taxonomic refinement of the names will have to be made.

The entire Sierra Madre Occidental, especially in the states of Chihuahua and Durango, can be very fruitful to both zoologists and botanists. Many areas remain to be explored and I especially recommend the southwest corner of Chihuahua near the Sinaloa border.

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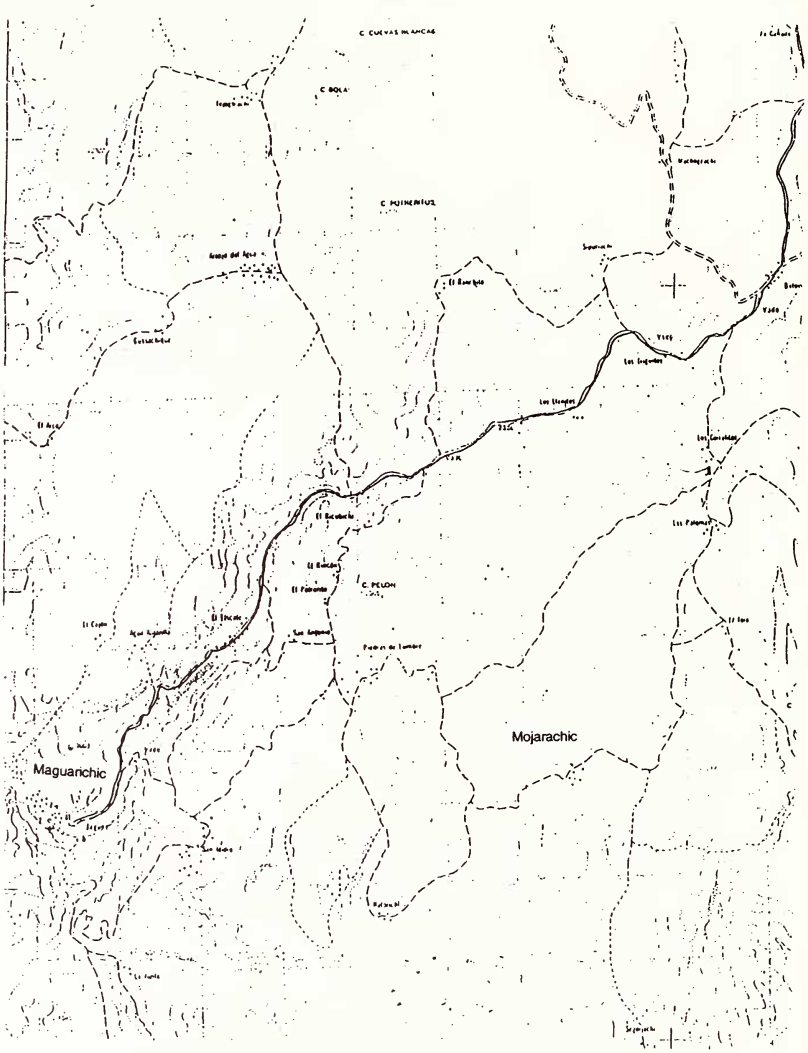

Figure 1. A drawing made in the Geography Department, Michigan State University, of a section of a map produced by the Republic of México, Centenal map (Instituto Nacional de Estadistica Geografía y Informatica, G13 A11, 1979) labeled "Maguarichic" on a scale of 1:50,000 to show the exact location of Maguarichic, Mojarachic, and Segorichic.

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